

used point counts to assess how bird diversity and community structure differed between land uses. Bird species richness was lowest in older plantations and highest in the espinal savanna, with the other land uses having intermediate richness. Bird abundance trends followed the same pattern, with low overall abundance in the plantations, intermediate levels for pasture/annual crops, and highest abundance in the espinal. Distinct bird community assemblages were strongly associated with each land use, and between young and older eucalyptus. Bird can be useful indicators for biodiversity as a whole, and the depopulated and depauperate avian community within the eucalyptus plantations will likely lead to reduced provisioning of many ecosystem services in this region of the spatial extent of the plantations continues to expand.

Email: [djflaspo@mtu.edu](mailto:djflaspo@mtu.edu)

**Sustainable biomass production in eucalypt plantations under climate changes:  
insights from a throughfall exclusion experiment**

*Jean-Paul Laclau*  
*CIRAD*

The frequency of drought periods should increase under climate changes in many tropical regions. A large-scale throughfall exclusion experiment was set up in Brazil to study the interaction between water status and potassium (K) or sodium (Na) availability on the ecophysiology of Eucalyptus trees. Across the water supply regimes, the stemwood biomass at the harvest age was 2.7 and 1.6 times higher in trees fertilized with KCl and NaCl, respectively, than in trees with no K and Na addition. Excluding 1/3 of the rainfall reduced stemwood production only for trees fertilized with K, as a result of low water requirements of K-deficient trees. Gas exchange water used efficiency (WUE) estimates were not correlated with WUE for wood production. The allocation pattern in response to nutrient and water supply appeared to be a major driver of WUE for stemwood production. Phloem sap and leaf  $\delta^{13}C$  were not valuable proxies of WUE for wood production, which suggests a weak interest for breeding programs. The strong interaction between water and nutrient availabilities on tree functioning in this study suggests that a slight decrease in fertilization rates could help reduce the risks of mortality of Eucalyptus trees under conditions of extreme water deficit.

Email: [laclau@cirad.fr](mailto:laclau@cirad.fr)

**Current Japanese biomass policy and promising local-scale heat and power generation  
for refueling abandoned urban forest**

*Toru Terada*  
*University of Tokyo*

Japanese government began the Feed-in Tariff (FIT) policy for renewable energies in July 2012 and 272 biomass power plants—3.16 million KW in total capacity—have been approved from November 2015. FIT is expected to contribute to the maintenance of mountainous abandoned forests, but the current rapid increase and emphasis on large-sized, electricity-producing plants threaten domestic biomass supply and biomass heat-energy utilization. In April 2015, FIT policy has been revised to allocate preferential financial treatment to smaller power plants (less than 2MW). This policy changeover provides an opportunity for biomass plants to be set up even in urban areas. The high availability of exhaust heat in smaller plants contributes to the fulfillment of